



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,046	10/20/2003	Julie Elizabeth Fouquet	10030671-1	3502

7590 03/22/2006
AGILENT TECHNOLOGIES, INC.
Legal Department, DL429
Intellectual Property Administration
P.O. Box 7599
Loveland, CO 80537-0599

EXAMINER	
LEE, HWA S	
ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 03/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/690,046

Applicant(s)

FOUQUET, JULIE ELIZABETH

Examiner

Andrew Hwa S. Lee

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/26/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1, 2, and 7** are rejected under 35 U.S.C. 102(b) as being anticipated by Sawin et al (US 5,450,205).

Sawin et al (Sawin hereinafter) show an apparatus for measurement of thin film layer thickness comprising:

a light source (column 11, lines 64+) operable to produce light at different wavelengths,

said light directed at a sample under test; and

an imager (342, column 23, lines 13+) operable for detecting light from said sample

under test, said imager comprising a plurality of first regions, said plurality of first

regions comprising a filter material for detecting light that comprises light at a first

wavelength while blocking light that comprises light at a second wavelength, said

imager further comprising a plurality of second regions, said plurality of second

regions comprising a filter material for detecting light comprising light at said

second wavelength, wherein each of said plurality of first and second regions

corresponds to a respective pixel of said imager and wherein said first regions and

said second regions are interleaved in a pattern.

Art Unit: 2877

With regards to claim 7, Sawin shows a third filter which would block light from the first and second wavelengths.

With regards to claim 10, the claim does not further limit the structural limitations of claim 1 in that it only recites the intended use for the apparatus and therefore the claim does not provide a further limitation.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. **Claims 3 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawin.

Sawin shows all the limitations as shown above but does not state that the pattern is a regular pattern and Sawin also does not show a diffuser used with the light source.

With regards to the pattern being regular, it would be obvious to a skilled artisan that the pattern would be regular, rather than irregular. Sawin states that the color CCD is actually *three sets of arrays*, thus clearly suggesting that there is a “regular” pattern rather than a random pattern.

With regards to the use of a diffuser, Official Notice is given that the use of a diffuser to produce short coherence light is well known. At the time of the invention, one of ordinary skill in the art would have used a diffuser in order to ensure a source of light having short coherence.

6. **Claims 1-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Crowley et al. (US 6,547,454) in view of Sawin.

With regards to **claims 1, 2, 11, 12, 13, 20, and 21**, Crowley et al (Crowley hereinafter) show an imaging system comprising an interferometer and an ultrasound console comprising:

- an interferometer (e.g. Figure 8)
- a light source (102, 103) operable to produce light at different wavelengths, said light directed at a sample under test;
- and an imager (342, column 23, lines 13+) operable for detecting light (en-face images) from said sample under test, said imager comprising a plurality of individual photodetectors (elements) in each array tuned to detect light at different wavelengths (claims 2, 12, 13, and 21).

Crowley does not expressly show the arrays for each wavelength being in a regular pattern and also does not show how the photodetectors are tuned to detect light at different wavelengths.

Sawin shows a color CCD having three sets of arrays of CCD detector elements (pixels), each of the three pixels tuned by having a different, fairly broadband wavelength filter (such as red, green, and blue) placed in front of it.

At the time of the invention, one of ordinary skill in the art would have used the color CCD of Sawin with the apparatus of Crowley in order to detect light at different wavelengths as Crowley requires an imager that has a plurality of individual photo detectors in each array tuned to detect light at different wavelengths.

With regards to **claims 3, 14, and 15**, Sawin shows all the limitations as shown above but do not state that the pattern is a regular pattern. It would be obvious to a skilled artisan that the pattern would be regular, rather than irregular. Sawin states that the color CCD is actually *three sets of arrays*, thus clearly suggesting that there is a “regular” pattern rather than a random pattern. With respect to claim 15, Crowley shows a beamsplitter (222) and states “*One of the detectors 224, 226 may be tuned to detect light at a wavelength corresponding to the first light source 102 and the other detector may be tuned to detect light at a wavelength band corresponding to the second light source 103.*” and therefore would have been obvious to use a filter to perform the tuning as Sawin teaches and as discussed above..

Art Unit: 2877

With regards to **claims 4, 5, 18, and 24** please see column 11, lines 33+ where the images are compared (difference).

With regards to **claims 6 and 22**, Official Notice is taken that compensating for differences in optical elements to equalize (gain factor) two or more images to be compared is well known in the art. At the time of the invention, one of ordinary skill in the art would have equalized the images when they are being compared by using gain factors in order to equalize the images so that a good comparison between the images can be made, such as when one image has a higher level of exposure compared to another image having a lower exposure.

With regards to **claims 7, 8, 17, and 25**, Crowley shows that more than two wavelengths may be used and Sawin shows a third filter for the third wavelength which would block wavelengths of both the first and second wavelengths. And since all wavelengths besides the primary three wavelengths are filtered, it would be inherent that subharmonic wavelengths are filtered also.

With regards to **claim 9**, Official Notice is given that white light sources and diffusers are well known for providing as a broadband light source having short coherence where the diffuser further ensures that the light has a short coherence. At the time of the invention, one of ordinary skill in the art would have used a white light and a diffuser to in order to provide short coherent light having multiple wavelengths in order to lower the cost of the apparatus.

With regards to **claim 10**, the claim does not further limit the structural limitations of claim 1 in that it only recites the intended use for the apparatus and therefore the claim does not provide a further limitation.

With regards to **claim 19**, although Crowley does not expressly show the interferometer comprising a fiber bundle, Crowley shows fibers leading from light sources 102 and 103, and one of ordinary skill in the art would have attached (bundled) the two optical fibers into a bundle to organize and make the interferometer more compact.

7. **Claims 16 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Crowley and Sawin as applied to claim 15 above, and further in view of Yang et al (US 6,611,339).

Crowley shows a first and second imager (224, 226) but does not show the use of a dichroic beamsplitter.

Yang et al. (Yang hereinafter) show interferometric tomography wherein the detection light is split into two wavelengths for detection by a dichroic beamsplitter (230, DM) where the 800nm wavelength light is transmitted to detector D2 and the 400nm wavelength is reflected to detector D1.

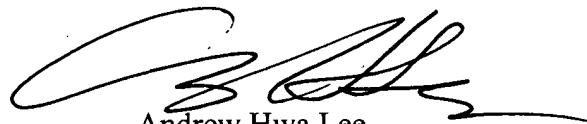
At the time of the invention, one of ordinary skill in the art would have been motivated to use the dichroic mirror (beamsplitter) of Yang as one of ordinary skill in the art would recognize the apparatus would have fewer elements than the use of two or more filters and a beamsplitter.

Art Unit: 2877

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Hwa S. Lee whose telephone number is 571-272-2419. The examiner can normally be reached on Tue-Fr.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on 571-272-2800 ext 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Andrew Hwa Lee
Primary Examiner
Art Unit 2877